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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,619	02/02/2004	Yoshinori Tsubaki	04072/HG	2307

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EXAMINER

SCHWARTZ, PAMELA R

ART UNIT PAPER NUMBER

1774

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/770,619	Applicant(s) TSUBAKI ET AL.	
	Examiner Pamela R. Schwartz	Art Unit 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) 17-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-19 and 21 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. Claims 1-5, 8, 9, 11, 12, 14,15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Held et al. (5,537,137) in view of Liu et al. (US 2003/0099816) for reasons of record and for reasons given below. With respect to new claims 19 and 20, Held et al. disclose ratios of filler to polymer of 7:1 to 0.1:1. These ratios overlap with those of the instant claims

2. Claims 6, 7, 10, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Held et al. (5,537,137) in view of either patent to Kobayashi et al. (6,761,941 or 5,612,281) for reasons of record and for reasons given below.

3. Claims 1-5, 8, 9, 11, 12, 14, 15 and 21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10/886,433 in view of Liu et al. (US 2003/0099816). The copending application recites in its claims an ink jet recording sheet having a layer comprising a hydrophilic binder and an inorganic pigment that is gas-phase silica. The binder is recited as cross-linked with ionizing radiation. The claims of the application are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs. Claim 5 of the copending application recites that the support is non water-absorptive.

Liu et.al. is relied upon as in paragraph 2 above for the particulars of the silica which have not been set forth by the claims of the copending application.

This is a provisional obviousness-type double patenting rejection.

4. Claims 6, 7, 10, 13 and 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10/886,433 in view of either patent to Kobayashi et al. (6,761,941 or 5,612,281).

The copending application recites in its claims an ink jet recording sheet having a layer comprising a hydrophilic binder and an inorganic pigment that is gas-phase silica. The binder is recited as cross-linked with ionizing radiation. The claims of the application are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs. Claim 5 of the copending application recites that the support is non water-absorptive.

The Kobayashi et al. references each disclose gas-phase silica for inclusion in ink jet recording layers. They do not specifically disclose a ratio of isolated silanol groups but they teach the number of silanol groups/nm² (see col. 6, lines 27-52 of '281 or col. 8, lines 25-52 of '941). These references teach that silica with low surface silanol density results in a highly porous structure. Based upon these teachings, it would have been obvious to one of ordinary skill in the art to select a gas-phase silica with low surface silanol density as the silica of the primary reference in order to form a layer of high void volume. With respect to particles size, '941 specifically sets forth the primary

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particle size at col. 8, line 65 to col. 9, line 6. '281 teaches the size of the secondary particles at col. 6, lines 53-67. From this disclosure, it would have been obvious to one of ordinary skill in the art that the primary particles had to be very small, on the order of a few nanometers, and in a range overlapping with that instantly claimed.

5. Claims 1-5, 8, 9, 11, 12, 14, 15 and 21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of copending Application Nos. 10/643,394, 10/833,842, 10/855,525 and 10/823340 each taken in view of Liu et al. (US 2003/0099816). The copending applications recite an ink jet recording sheet having a layer comprising a hydrophilic binder and inorganic microparticles. The binder is recited as cross-linked with ionizing radiation. The claims of the applications are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs.

With respect to 10/643,394, see claim 1 and the description of this embodiment at [0050-0052], 10/833,842, see claims 1-3, 10/855,525, see the claims and the description of the claimed embodiment at [0040,0049] and 10/823,340, see claims 1 and 2 and the description of the claimed embodiment at [0084]. It would have been obvious to one of ordinary skill in the art to determine the percentage of side chains on the hydrophilic polymer in order to control the degree of cross-linking that occurs at

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these sites. In each case a non-water absorptive support is either claimed or described in the specification concerning the claimed embodiment of the invention.

In each case, the particles are disclosed to be silica. Liu et al. is relied upon as in paragraph 2 above for the particulars of the silica which have not been set forth by the claims of the copending application.

This is a provisional obviousness-type double patenting rejection.

6. Claims 6, 7, 10, 13 and 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of copending Application Nos. 10/643,394, 10/833,842, 10/855,525 and 10/823,340 each taken in view of either patent to Kobayashi et al. (6,761,941 or 5,612,281).

The copending applications recite an ink jet recording sheet having a layer comprising a hydrophilic binder and inorganic microparticles. The binder is recited as cross-linked with ionizing radiation. The claims of the applications are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs. With respect to 10/643,394, see claim 1 and the description of this embodiment at [0050-0052], 10/833,842, see claims 1-3, 10/855,525, see the claims and the description of the claimed embodiment at [0040,0049] and 10/823,340, see claims 1 and 2 and the description of the claimed embodiment at [0084].

The Kobayashi et al. references each disclose gas-phase silica for inclusion in ink jet recording layers. They do not specifically disclose a ratio of isolated silanol groups but they teach the number of silanol groups/nm² (see col. 6, lines 27-52 of '281 or col. 8, lines 25-52 of '941). These references teach that silica with low surface silanol density results in a highly porous structure. Based upon these teachings, it would have been obvious to one of ordinary skill in the art to select a gas-phase silica with low surface silanol density as the silica of the primary reference in order to form a layer of high void volume. With respect to particles size, '941 specifically sets forth the primary particle size at col. 8, line 65 to col. 9, line 6. '281 teaches the size of the secondary particles at col. 6, lines 53-67. From this disclosure, it would have been obvious to one of ordinary skill in the art that the primary particles had to be very small, on the order of a few nanometers, and in a range overlapping with that instantly claimed.

7. Claims 1-5, 8, 9, 11, 12, 14, 15 and 21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 11/186,692 taken in view of Liu et al. (US 2003/0099816). The copending application recites an ink jet recording sheet having a layer comprising a hydrophilic binder and inorganic microparticles. The binder is recited as cross-linked with ionizing radiation. When reading the claims in light of the specification, they are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in

the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs.

In each case, the particles are disclosed to be silica. Liu et al. is relied upon as in paragraph 2 above for the particulars of the silica which have not been set forth by the claims of the copending application.

This is a provisional obviousness-type double patenting rejection.

8. Claims 6, 7, 10, 13 and 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 11/186,692 taken in view of either patent to Kobayashi et al. (6,761,941 or 5,612,281).

The copending application recites an ink jet recording sheet having a layer comprising a hydrophilic binder and inorganic microparticles. The binder is recited as cross-linked with ionizing radiation. When read in light of the specification, the claims of the applications are directed to the same kinds of binder polymers with the same or overlapping polymerization degree and a plurality of side chains that are cross-linked to the main chain by UV radiation. It would have been obvious to one of ordinary skill in the art to control the ratio of side chains to the main chain in order to control the amount of cross-linking that occurs.

The Kobayashi et al. references each disclose gas-phase silica for inclusion in ink jet recording layers. They do not specifically disclose a ratio of isolated silanol groups but they teach the number of silanol groups/nm² (see col. 6, lines 27-52 of '281 or col. 8, lines 25-52 of '941). These references teach that silica with low surface silanol

density results in a highly porous structure. Based upon these teachings, it would have been obvious to one of ordinary skill in the art to select a gas-phase silica with low surface silanol density as the silica of the primary reference in order to form a layer of high void volume. With respect to particles size, '941 specifically sets forth the primary particle size at col. 8, line 65 to col. 9, line 6. '281 teaches the size of the secondary particles at col. 6, lines 53-67. From this disclosure, it would have been obvious to one of ordinary skill in the art that the primary particles had to be very small, on the order of a few nanometers, and in a range overlapping with that instantly claimed.

9. Applicant's arguments filed December 22, 2005 have been fully considered but they are not persuasive. Once the binder of Held et al. is cross-linked, the medium of the reference meets all of the claim limitations about which applicants argue. The ratio of pigment to cross-linked binder is in the instantly recited range (col. 10, lines 10-21 of the reference). Applicants do not claim the polymerization degree of their polymer after cross-linking and prior to polymerization, the range of the reference, i.e. 400 to 3000, falls within the claimed range. Claims 8-10 say that the polymer "is cross-linked by exposing ionizing radiation to a hydrophilic polymer of a degree of polymerization of at least 500" (emphasis added) so this polymerization degree is of the polymer prior to cross-linking. The ratio of filler to polymer compound is taught by the reference because the ranges of ratio of filler to polymer overlap with the range in the instant claims. Applicants' position appears to be that this ratio of filler to polymer is irrelevant because it is prior to cross-linking. The examiner disagrees because the weight ratio of these components will not be significantly altered by cross-linking of the polymer and

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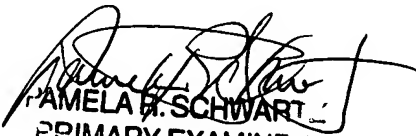
there is nothing in the instant claims that prevents them from reading on an imaged and cross-linked medium. Finally, one of ordinary skill in this art would expect significant differences when comparing a cross-linked polymer with one that has not been cross-linked. Consequently, applicants' results are not unexpected.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela Schwartz whose telephone number is (571) 272-1528.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PRSchwartz
February 28, 2006


PAMELA B. SCHWARTZ
PRIMARY EXAMINER